



09/596,402

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PATENT  
Docket No.: P-9399.00 US

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Jimenez et al.  
Patent No.: 6,850,803  
Issued: February 1, 2005  
For: IMPLANTABLE MEDICAL DEVICE WITH A RECHARGING COIL  
MAGNETIC SHIELD

**CERTIFICATE OF MAILING OR TRANSMISSION** I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on May 11, 2005

  
Anne M. La Dow

## TRANSMITTAL LETTER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450


**Certificate**  
**MAY 18 2005**  
**of Correction**

Enclosed for filing in the above-identified application are the following:

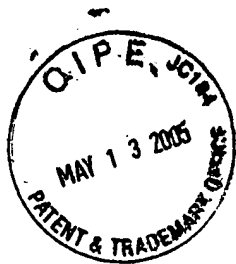
- ☒ Request for Certificate of Correction of Patent for PTO Mistake  
☐ Request for Certificate of Correction of Patent for Applicant Mistake  
☐ The Commissioner is hereby authorized to charge \$100 for the Certificate of Correction fee to Deposit Account No. 13-2546.
- ☒ Certificate of Correction  
☒ Return Receipt Postcard  
☒ The Commissioner is hereby authorized to charge or credit any deficiencies or overpayments, which may have been overlooked on this Transmittal Letter with regard to this filing, to Deposit Account No. 13-2546. A duplicate of this Transmittal Letter is enclosed.

Respectfully submitted,

Date: May 11, 2005

  
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MAY 23 2005



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In re Patent of: Jimenez et al.  
Patent No.: 6,850,803  
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For: IMPLANTABLE MEDICAL DEVICE WITH A RECHARGING COIL  
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REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT  
FOR PTO MISTAKE (37 CFR 1.322(a))

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

It is requested that a Certificate of Correction be issued correcting printing errors appearing in the above-identified United States patent. The text of the Certificate of Correction in the suggested format is enclosed.

As none of the errors listed is due to Applicant's mistake, no fee is necessary in connection with this Request.

The exact page and line number where the errors are shown correctly in the application file are:

<u>Location</u>	<u>Error in Patent</u>	<u>Correctly shown in application file</u>
Column 7, Line 67	"...and the second agnetic shield."	"...and the second magnetic shield."
Column 8, Line 1	"...as in claim 13, where the magnetic..."	"...as in claim 13, wherein the magnetic..."

05/13/2005 RFEKADU1 00000019 132546 6850803

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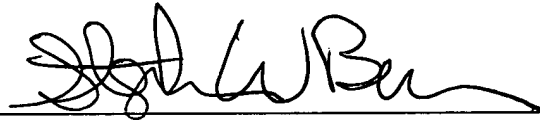
Please send the Certificate to:  
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The name of the assignee is Medtronic, Inc. The assignment was recorded on April 17,  
2001 at Reel 011743, Frame 0386.

Respectfully submitted,

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**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO. : 6,850,803

DATED : February 1, 2005

INVENTOR(S) : Oscar Jimenez, John Kast, Mark Schommer, Guillermo Echarri, James Riekels

It is certified that error appears in the above-identified patent and that said Letters Patent  
is hereby corrected as shown below:

Column 7, Line 67: "...and the second agnetic shield."  
Should read "...and the second magnetic shield."

Column 8, Line 1: "...as in claim 13, where the magnetic..."  
Should read "...as in claim 13, wherein the magnetic..."

MAILING ADDRESS OF SENDER:

PATENT NO. 6,850,803

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This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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MAY 23 2005

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Thus, embodiments of an implantable medical device 20 with a recharging coil magnetic shield 70 are disclosed to improve recharging efficiency and many other advantages apparent from the claims. One skilled in the art will appreciate that the present invention can be practiced with embodiments other than those disclosed. The disclosed embodiments are presented for purposes of illustration and not limitation, and the present invention is limited only by the claims that follow.

What is claimed is:

- ✓ 1. An implantable medical device having an efficient recharging coil, comprising:
  - a housing having an interior cavity, a proximal face, and an electrical feedthrough;
  - electronics carried in the housing interior cavity and configured to perform a medical therapy;
  - a rechargeable power source carried in the housing interior cavity and coupled to the electronics;
  - a secondary recharging coil coupled to the electronics and rechargeable power source, the secondary recharging coil having a distal side and having an axis; and,
  - a magnetic shield placed on the distal side of the recharging coil to improve recharging efficiency, the shield being approximately perpendicular to the axis of the secondary recharging coil and the shield being located between the recharging coil and the electronics.
- ✓ 2. The implantable medical device as in claim 1 wherein the magnetic shield improves recharging efficiency by improving electromagnetic coupling between the secondary recharging coil and a primary recharging coil.
- ✓ 3. The implantable medical device as in claim 2 wherein the magnetic shield improves the recharging efficiency by increasing flux lines that couple with the recharging coil from the primary recharging coil.
- ✓ 4. The implantable medical device as in claim 2 wherein the magnetic shield improves the electromagnetic coupling to greater than 10 percent coupling efficiency at about one centimeter.
- ✓ 5. The implantable medical device as in claim 1 wherein recharging efficiency is improved by decreasing flux lines emanating from a primary coil that couple with the housing.
- ✓ 6. The implantable medical device as in claim 5 wherein the magnetic shield provides improved recharging efficiency through reduced eddy currents in the housing.
- ✓ 7. The implantable medical device as in claim 6 wherein the magnetic shield provides reduced medical device temperature rise during recharging of the power source through reduced currents in the housing.
- ✓ 8. The implantable medical device as in claim 7 wherein the implantable medical device temperature rise during recharging is less than two degrees Celsius.
- ✓ 9. The implantable medical device as in claim 1 wherein the magnetic shield is a material with high magnetic permeability.
- ✓ 10. The implantable medical device as in claim 9 wherein the magnetic shield is selected from the group consisting of: amorphous metal film, amorphous metal wire, and magnetic alloy.
- ✓ 11. The implantable medical device as in claim 1 wherein the magnetic shield includes eddy cuts to reduce eddy current flow through the magnetic shield.
- ✓ 12. The implantable medical device as in claim 1 wherein the magnetic shield has a central opening.
- ✓ 13. The implantable medical device as in claim 1, wherein the magnetic shield comprises a first magnetic shield and a second magnetic shield and a first insulator placed between the first magnetic shield and the second magnetic shield.

magnetic

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14. The implantable medical device as in claim 13, where the magnetic shield further comprises a third magnetic shield and a second insulator placed between the second magnetic shield and the third magnetic shield.
15. The implantable medical device as in claim 14, wherein the first insulator and a second insulator are selected from the group consisting of: plastic, mylar, and tape.
16. The implantable medical device as in claim 1 wherein the secondary recharging coil is carried on the proximal face of the housing and the magnetic shield is placed between the recharging coil and the proximal face of the housing.
17. An implantable medical device having an efficient recharging coil, comprising:
  - a housing having an interior cavity, a proximal face, and an electrical feedthrough;
  - electronics carried in the housing interior cavity and configured to perform a medical therapy;
  - a rechargeable power source carried in the housing interior cavity and coupled to the electronics;
  - a secondary recharging coil coupled to the electronics and rechargeable power source, the secondary recharging coil having a distal side and an axis; and
  - a magnetic shield placed on the distal side of the recharging coil to improve recharging efficiency, the shield being approximately perpendicular to the axis of the secondary recharging coil and the shield being located between the recharging coil and the electronics;
 wherein the secondary recharging coil is an external secondary recharging coil located remotely away from the housing.
18. An implantable medical device having an efficient recharging coil, comprising:
  - a housing having an interior cavity, a proximal face, and an electrical feedthrough;
  - electronics carried in the housing interior cavity and configured to perform a medical therapy;
  - a rechargeable power source carried in the housing interior cavity and coupled to the electronics;
  - a secondary recharging coil coupled to the electronics and rechargeable power source, the secondary recharging coil having a distal side and an axis; and
  - a magnetic shield placed on the distal side of the recharging coil to improve recharging efficiency, the shield being approximately perpendicular to the axis of the secondary recharging coil and the shield being located between the recharging coil and the electronics;
 wherein the recharging coil is located in the housing interior cavity.
19. An implantable medical device having an efficient recharging coil, comprising:
  - a housing having an interior cavity, a proximal face, and an electrical feedthrough;
  - electronics carried in the housing interior cavity and configured to perform a medical therapy;
  - a rechargeable power source carried in the housing interior cavity and coupled to the electronics;
  - a secondary recharging coil coupled to the electronics and rechargeable power source, the secondary recharging coil having a distal side and an axis; and
  - a magnetic shield placed on the distal side of the recharging coil to improve recharging efficiency, the shield being approximately perpendicular to the axis of the secondary recharging coil and the shield being located between the recharging coil and the electronics;
 wherein the housing is an electric conductor.